



Name Key
Date _____ Period _____

PHASE CHANGE WORKSHEET

The graph was drawn from data collected as a substance was heated at a constant rate. Use the graph to fill in the blanks.

At point A, the beginning of observations, the substance exists in a solid state.

Material in this phase has DEFINITE volume and DEFINITE shape. With each passing minute HEAT is added to the substance. This causes the molecules TO MOVE more rapidly which we detect by a TEMPERATURE rise in

the substance, this results in a change in KINETIC energy. At point B, the temperature of the substance is 70 °C. The solid begins to MELT.

At point C, the substance is completely MELTED or in a LIQUID state.

Material in this phase has DEFINITE volume and INDEFINITE shape. The energy put to the substance between minutes 5 and 9 was used to convert the substance from SOLID to LIQUID. This heat energy is called the **heat of fusion** and is causing a change in POTENTIAL energy.

Between 9 and 13 minutes, the added energy increases the KE/TEMP of the substance. During the time from point D to point E, the liquid is BOILING.

By point E, the substance is completely in the GAS phase. Material in this phase has an INDEFINITE volume and INDEFINITE shape. The energy put to

the substance between minutes 13 and 18 converted the substance from a

LIQUID to a GAS state. This heat energy is called the **heat of**

vaporization. Beyond point E, the substance is still in the GAS phase,

but the molecules are moving FASTER as indicated by the increasing temperature.

Which of these three substances was likely to be used in this phase change experiment ???

Substance	Melting Point	Boiling Point
Bolognium	20°C	100°C
Unobtainium	40°C	140°C
<u>Foosium</u>	70°C	140°C

Phase Changes:

Answer the following:

1. Changing from a liquid to a solid is called: FREEZING
2. Changing from a liquid to a gas is called: VAPORIZATION (BOILING)
3. Changing from a gas to a liquid is called: CONDENSATION
4. Changing from a solid to a gas is called: SUBLIMATION
5. Changing from a solid to a liquid is called: MELTING
6. Changing from a gas to a solid is called: DEPOSITION
7. Which three phase changes require the addition of heat?
1. MELTING 2. BOILING 3. SUBLIMATION
8. Which three phase changes require the removal of heat?
1. DEPOSITION 2. CONDENSATION 3. FREEZING
9. The temperature at which a liquid changes to a solid is called the FREEZING. For water, this temperature is 0 degrees Celsius and 32 degrees Fahrenheit.
10. The temperature at which a liquid changes to a gas is called the BOILING. For water, this temperature is 100 degrees Celsius and 212 degrees Fahrenheit.
11. All phase changes are examples of PHYSICAL changes. (chemical or physical)